# The Potential Use of Health Level 7 to Capture PVS Data

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# Acknowledgements

- **Committee for Immunization Registry Standards and Electronic Transactions (CIRSET)**
- **American Immunization Registry Association (AIRA)**
- **Susan Abernathy (retired)**

# Outline

- **Background on Immunization Registries**
- **Background on HL7**
- **HL7 use in Immunization Registries**
- **Why Bother Map PVS Elements to HL7**
- **Methods and Results of the examination**
  - ◆ **National Code Sets Usage**
- **Consideration for Feedback and Discussion**

# Immunization Registries

- **Defined as confidential, computerized system that contains information about immunizations and children**

# A Brief History of Immunization Registries

- **1970s:  Registry built in Delaware**
- **1980s:  AIMS installed in 10 states/cities**
- **1990s:**
  - **RWJ and NIP fund development**
  - **CDC-sponsored registry software**
  - **Community/state-based registries**
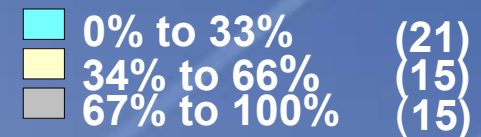  - **Presidential directive:  Immunization Registry Initiative**

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# Children < 6 years with 2+ Immunizations, 2001



| | 0% to 33% | (21) |
| | 34% to 66% | (15) |
| | 67% to 100% | (15) |

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# Functional Status Achievement of Immunization Registries



Functional Standards

Number of Population-Based Projects

Functional Standard

Legend: 1999-2000, CY 2000, CY 2001
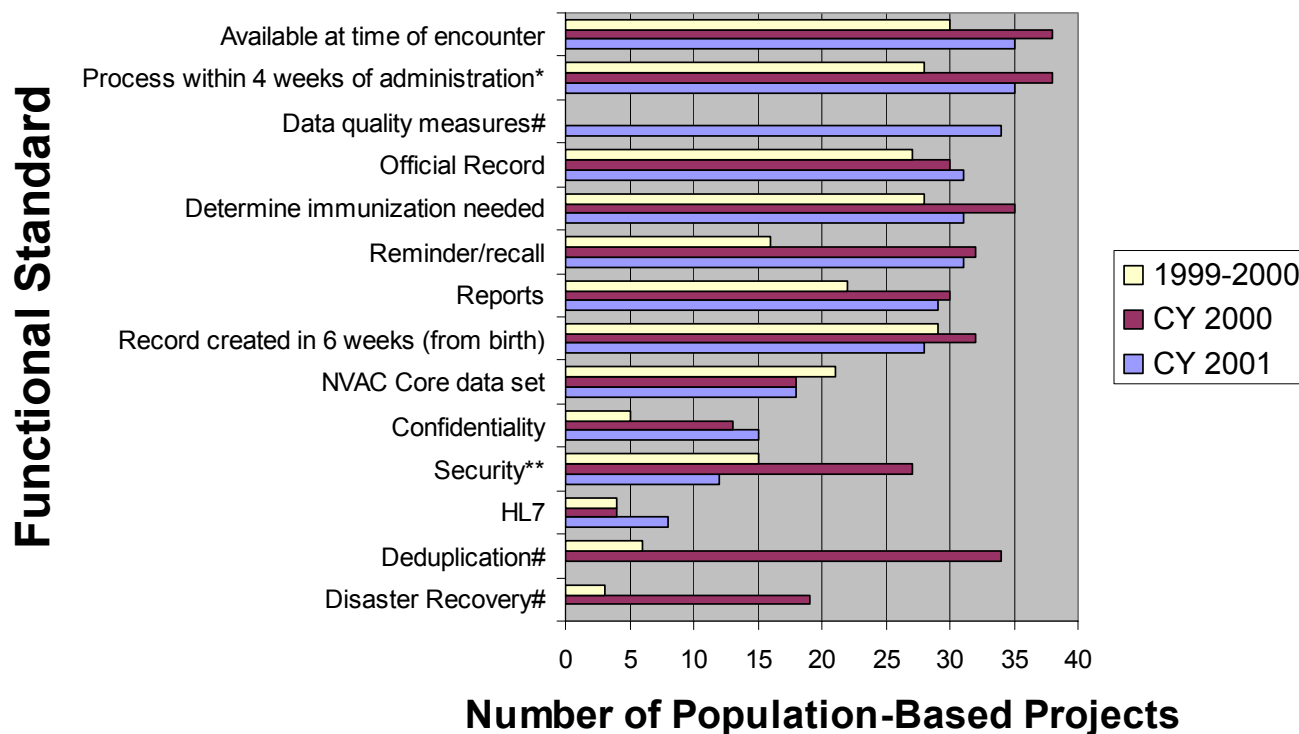
# Health Level 7

- **Accredited Healthcare Standards Developing Organization (SDO)**
- **Not-for-profit, volunteer SDO**
- **Participation: includes providers, vendors, payers, consultants, government, others**
- **Domain focus: Clinical & Administrative Data**

# 4 Current HL7 Immunization Messages

| Message | Trigger Event | Message Type | Description |
|---------|---------------|--------------|-------------|
| Query for Vaccination Record | V01 | VXQ | a query from one system for a patient's vaccination record that is held in another system |
| Response to Query with Multiple PID Matches | V02 | VXX | A response to a query reflecting more than one match to the patient identifiers in the query |
| Vaccination Record Response | V03 | VXR | a response to a query containing the vaccination record |
| Unsolicited Update to Vaccination Record | V04 | VXU | an unsolicited update to a vaccination record |

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# Why Bother Translating PVS to HL7? (business justifications)

- Determine whether or to what extent current HL7 messages can be used for PVS
- Show value to registry both to collect data & send to PVS
- Reduce cost & duplication of separate structure, function, & system development
- Builds registry capacity for potential BT or other related vaccination programs
- Promote registries as the single point of vaccination information

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# Why Bother Translating PVS to HL7? (technical justifications)

- **Utilize an existing, ANSI-approved standard**
- **Utilize existing Code Sets, e.g., LOINC, CVX, race-ethnicity, explore others**
- **Encourages local flexible data need/use/access**
- **Build bridge to next appropriate version of HL7**
- **Utilize and work with industry standards, standards, standards**

# Methods of Examination

- **Grass roots level examination so that immunization registries could use existing standards to meet these needs.**

- **A mapping document and guide were drafted**

- **Partnership vetting and discussion**

- **It is still a "WIP" (work in progress)**

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# Examined Two HL7 Structures

- **ORU used as an Unsolicited Report.**
  - ◆ **Electronic Laboratory Reporting**
  - ◆ **Adverse Event Reporting**
  - ◆ **Cancer Registries**
- **VXU used an Unsolicited update of to a immunization record**
- **Similar Electronic Structure**

# Overall Comparison
# HL7 VXU and ORU Structures

| (VXU) Unsolicited Vaccination Record Update | (ORU) Unsolicited Transmission of an Observation | HL7 Chp |
|---|---|---|
| MSH  Message Header Segment | MSH  Message Header Segment | 2 |
| PID    Patient Identification Segment | PID    Patient Identification Segment | 3 |
| NK1      Next of Kin/Associated Parties | NK1      Next of Kin/Associated Parties | 3 |
| ORC    Common Order Segment | ORC    Common Order Segment | 4 |
| RXA  Pharmacy Administration | | 4 |
| | OBR  Observations Report ID | 7 |
| OBX  Observation/Result | OBX  Observation/Result | 7 |
| NTE    Notes and comments (about ORC, RXA, or OBX) | NTE    Notes and comments (about OBX) | 2 |
| Optional Segments and Fields not described | | |

# HL7 to PVS Mapping (extract)

| HL7 IG231 Msg-Seg-Field-DT/LENGTH | Code Set | PVS # | PVS Data Element Name | PVS Description | PVS Data Type |
|---|---|---|---|---|---|
| **RXA-5; CE-100** | **CVX** | 6 | Vaccine Type | Name of vaccine given to pt | Char. |
| **OBX** | **LOINC 30948-4** | 9 | Adverse Event Text | Text for any adv. Event w/current vaccination | Text |
| **PID-10; CE-80** | **HL7 (see race /ethnicity)** | 36 | RACE-Asian | Indicates if Pt. is Asian or part Asian | Boolean |

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# National Code Set Usage

| Code Set | PVS element | Mapping |
|----------|-------------|---------|
| CVX for Vaccine Type | 28 | CVX 105=Vaccinia |
| Race/Ethnicity | | Asian=2028-9, White=2106-3, Am Indian=1002-5 |

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# Logical Observations Identifiers Names and Codes (LOINC) for PVS

- **Used to identify items in name pair structures such as an HL7 clinical observation, XML tag**

- **Examples:**
  - ◆ **Vaccine Lot Number (30959-1)**
  - ◆ **Text items (30954-2)**
  - ◆ **Manufacturer (30957-5)**

# Results of Mapping Examination Between HL7 and PVS

- The VXU message was mapped

    - Consideration of other message ORU

- Most PVS elements found a direct structure in an existing HL7 message

- PVS elements unique to SMALLPOX could be added to existing code sets

- Code sets can be expanded to meet needs easier than modifications to electronic structures

# Potential Topics for Feedback and Discussion

- **What will it take to promote and evolve the immunization registries to meet "PVS-like" reporting as part of the PHIN?**

- **Why should "code sets" be used to capture and/or identify data in the PHIN?**

- **What considerations (technical and non-technical) should be factored into the evolution of PVS and HL7?**

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